Model Evaluation Report

dataMineR

19/6/2013

CONTENTS

CHAPTER 1

INTRODUCTION

This evaluation report is generated using R, R-studio and knitr to knitr R code from markdown into html and later LateX format. We have the option to include all R code that is used to generate the plots and calculations. By default this feauture is dissabled.

The model evaluation step is the forth step in a datamining process. Steps identified in the datamining process are:

- Data analysis
- Behaviour analysis
- Missing value analysis
- Missing value imputation (optional)
- Binning
- Feature selection
- Model development
- Model evaluation
- Model deployment

For the model evaluation process takes models developped in the previouss step and evaluates these models against the test data saved in the test set.

1.1 Information on Testset

Basic information from the testset we are using.

We are using data from file : ../data/test-set.Rdata. The dataset has 26 variables and 27741 rows.

CHAPTER 2

EVALUATION SETUP

The basic challengence in datamining is that we will develop a predictive model that has predictive capability on onseen data(our test set). There are a lot of learning methods that can leverage a large proportion of the collected data using n-fold cross validation.

If there are enough cases we can use a simple shema that holds back a percentage of cases as a test set. The training set will be used entirely for model development using the above mentioned validation methods. The test set is only used in model evaluation.

For model evaluation there are a lot of criteria available. Here we will focus on ROC and Lift curves to decide which model we will select for deployment.

CHAPTER 3

MODELS PROPOSED FOR EVALUATION

In the development process we have develloped a set of models, based on different parameters(like size of trainingset, size of end nodes, number of trees in the forest etc etc).

More on validation and Out Of Bag error

3.1 Model store

We have loaded the model store with 7. The modelstore is loaded from ../data/modelStore.Rdata.

Models available for evaluation are model.simple.tree, model.tree, model.tree.p, model.rf, model.rf.s, model.rf.s.b2, model.rf.s.b2.t10

CHAPTER 4

EVALUATION

More on model evaluation

4.1 ROC

ROC curves

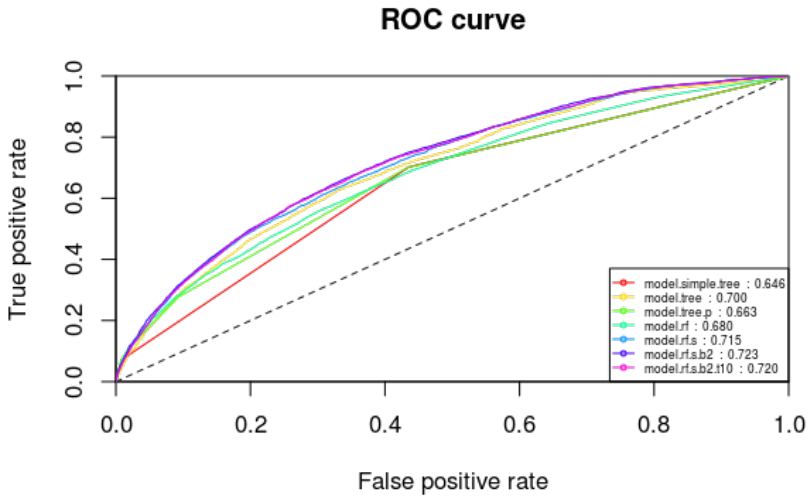

Figure 4.1: ROC curves

4.2 Lift

Lift curves

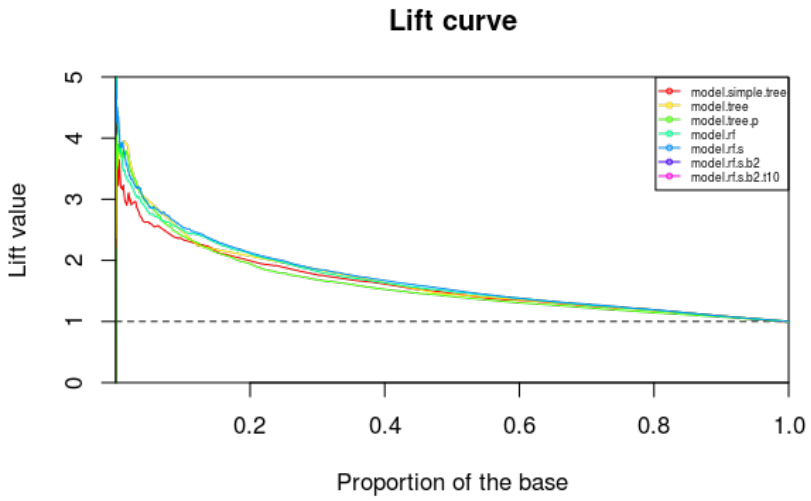

Figure 4.2: Lift curves

4.3 Gains chart

CHAPTER 5

SCORE TABLE

Here we show performance of the selected model. The test set if divided into bins. For each bin we calculate the change our target event happens, we also include upper and lower bands.

No	Yes	n	p	p.lcl	p.ucl
1354	43	1397	0.03078	0.02236	0.04124
1364	56	1420	0.03944	0.02992	0.05091
1322	55	1377	0.03994	0.03023	0.05167
1270	85	1355	0.06273	0.05041	0.07699
1293	128	1421	0.09008	0.0757	0.1062
1200	153	1353	0.1131	0.09669	0.1312
1258	140	1398	0.1001	0.0849	0.1171
1274	157	1431	0.1097	0.09399	0.1271
1152	181	1333	0.1358	0.1178	0.1554
1217	199	1416	0.1405	0.1228	0.1597
1214	219	1433	0.1528	0.1346	0.1725
1127	212	1339	0.1583	0.1392	0.179
1139	252	1391	0.1812	0.1613	0.2024
1131	257	1388	0.1852	0.165	0.2066
1136	260	1396	0.1862	0.1661	0.2077
1052	321	1373	0.2338	0.2116	0.2571
1003	363	1366	0.2657	0.2425	0.29

954	441	1395	0.3161	0.2918	0.3413
882	525	1407	0.3731	0.3478	0.399
712	640	1352	0.4734	0.4465	0.5004

Model selected is model.rf.s.